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The remainder of the text is largely devoted to biological phases of the subject. Much material which is not accessible in any other text is here brought together and is treated from a broad biological view-point. The subjects of color and coloration; the origin of adaptations and of species, distribution; the relation of insects to plants and to other animals; their interrelations and their behavior, are treated in a concise but most readable and interesting manner.

Though the method of treatment is professedly economic as well as biologic, the practical aspect of the subject receives but scant attention. The relations of insects to plants, and to other animals, are discussed from the view-point of the biologist. Six pages are devoted to an excellent summary of the important subject of the transmission of disease by insects. The sixteen pages on insects in relation to man are largely given over to a statement of the importance of the subject and to an historical sketch of the progress of economic entomology in America.

The illustrations are excellent and, in many cases, new and prepared by the author. Such as have been copied are very carefully credited. An extensive and carefully arranged bibliography will be very helpful to the student.

Dr. Folsom is to be congratulated on the clear, concise, and interesting presentation of his material. The book is one which is bound to prove stimulating, and which every worker in the field of entomology and every teacher of zoölogy will want in his own library. Whether it will meet the present day demands for an entomological text-book is a question.

W. A. R.

Additional Observations on *Hyla andersonii* and *Rana virgatipes* in New Jersey.—An effort was made this past summer to add to the observations on *Hyla andersonii* and *Rana virgatipes* published in two previous numbers of the *American Naturalist*.

It was observed in June at Lakehurst that the males of *Hyla andersonii* were attracted to a few small pools in particular, several of which were only a yard or two in diameter. On July 21st, with Mr. James Chapin, I made search in these pools for the tadpoles, and was fortunate in finding a number in one pool, though they appeared to be absent from another and similar locality about a mile distant where the adult frogs had been and were still most numerous. The tadpoles collected were in all stages from a few millimeters long to those just leaving the water as little frogs. The mature tadpoles are from 35 to 40 mm. long and of the usual tadpole color, that is, of the color of the

muddy bottom of a pool. The under parts are lighter and show a golden sheen, which sometimes extends up the sides. The small hind legs show early on the ends of the toes the disks that are so conspicuous in the mature *Hyla*. The tail is spotted, and there is usually a dark irregular marginal band. The maculations sometimes become irregular blotches as on the tails of the tadpoles of *Hyla versicolor*. When the tail is nearly absorbed, and they leave the water, they are about 25 mm. long and of a dull olive green. They grow lighter, that is, brighter green in hue with the disappearance of the tail, until the little frogs, which in length of body are 15 mm., resemble the mature individuals. The white that margins the green of the back and extremities is not so conspicuous as in the adults, and the saffron of the under parts is wanting in those that I have examined. The narrow band of purplish brown that commences at the nose and extends through the eyes and so down the sides is conspicuous in the little frogs before the last remnant of the tail has disappeared.

The adult *Hyla andersonii* is amusingly active at night and jumps about the lower limbs of the trees and on to the bushes with much agility. They seem rarely to climb over five or six feet from the ground. They sit upright and look pert, and if interrupted in the midst of their song they leave their bubbles blown up until such time as the intruder goes away or stands still. In the day time they are usually quiet and for the most part hide in the damp moss and leaves lying on the ground.

On the warm cloudy evening of August 10th, *Hyla andersonii* was heard near some pools a short distance north of the village of Farmingdale, N. J. This locality is 15 miles northeast of Lakehurst, which has been the most northern locality for the frog heretofore recorded.

Rana virgatipes may be called the Carpenter Frog, for its note sounds much like the blow of a hammer on a board. It is a quickly uttered *chuck-up, chuck-up*, and the frog usually hammers from three to four times. For a time I was not sure of the singer, but some captive individuals under the influence of good living have uttered this call-note in my room while I sat by. These frogs domineer over one another to some extent, and when insects were placed in the cage as food, it was common for the more active individual, failing in the attempt to catch a fly, to turn on his companion and butt him until he retreated into the pool or into a corner. The butted individual would hold his head down in the meekest manner, and he became so cowed that if I touched him at any time with my finger, he assumed the humble position. Miss Dickerson in *The Frog Book* says that

Rana pipiens and *Rana onca* will snap at the head of a companion frog that has taken a worm that he was trying to capture, but she thinks it is probably not an exhibition of anger, but a desire to secure the disappearing worm. However this may be, it is certain that the butting *Rana virgatipes* in the above-mentioned case secured a great advantage over the other frog, for after "settling" his companion, he captured all of the insects.

WILLIAM T. DAVIS

Zoölogical Laboratory Notes.—In the form of loose leaves bound together so that they can be individually removed, T. H. Sheffer¹ has prepared a set of laboratory notes on about two dozen common animals. Such notes are usually so arranged as to excite in the student a desire to study the material before him; this set described rather fully what he "ought" to see and is well calculated to kill any real growing interest he may have. The author thinks the notes should commend themselves to teachers "by reason of certain special advantages and a simple and rational treatment in general."

Notes.—*Circulatory Organs of Diotocardian Gastropods.* The study of the heart of the diotocardians by Spillmann ("Zur Anatomie und Histologie des Herzens und der Hauptarterien der Diotocardier." *Jen. Zeitschr. f. Naturwiss.*, vol. 40, pp. 537-538, pls. 19-21) justifies the separation of the Rhipidoglossa from the Docoglossa. In the Rhipidoglossa the pericardial chamber is penetrated by the intestine, and there are two auricles. While the auricles are thin-walled and deficient in muscle, the ventricle has a thick muscular wall of three layers. The openings from the auricles to the ventricle are guarded by lamellar valves. In the Docoglossa the intestine does not penetrate the pericardial chamber, and only the left auricle is present. This has the same structure as in the Rhipidoglossa, but the ventricle of the Docoglossa shows only two of the three layers seen in the Rhipidoglossa. In the Docoglossa the opening from the auricle into the ventricle is provided with a tubular valve. *Nerita* forms an interesting transition between these two groups so far as the structure of its heart is concerned. It may be called a docoglossan with a penetrated pericardial chamber or a rhipidoglossan with lamellar valves.

Goblet Cells in the Epidermis of Fishes. According to Oxner

¹Scheffer, T. H. *The Loose Leaf System of Laboratory Notes.* P. Blakiston's Son & Co., Philada., 1906, 112 pp.